

What is claimed is:

1. A method of classifying defects, comprising the steps of:

inspecting a sample to detect defects;

acquiring an image of the detected defects;

extracting feature amounts of the defects from the acquired defect image; and

classifying said detected defects with a defect classifier that uses the acquired feature amount information about the defects;

wherein said classifier has a decision tree for hierarchically expanding defect classification class elements via branch elements, and wherein classification rules are individually set for said branch elements.

2. The method according to claim 1, wherein a classification rule individually set in said classifier for each of said branch elements is set on a screen displaying inspection information derived from inspection of a sample.

3. The method according to claim 2, wherein said inspection information includes one or more of an image feature amount, a defect classification result, defect coordinates, a composition analysis result, manufacture initiation history data, machine QC data, a distribution of defect locations detected on a wafer, and number of defects.

4. The method according to claim 2, wherein sample defect attribute information as said inspection information

is presented using a defect distribution map and/or a graph indicating a relationship between a feature amount and a frequency.

5. The method according to claim 1, wherein said classifier is formed by teaching defects belonging to a category classified for each branch element of said decision tree on a screen after selecting the defects from detected defects.

6. The method according to claim 1, wherein a classification rule individually set for each of said branch elements provides rule-based classification and/or teaching classification.

7. The method according to claim 1, wherein a classification rule individually set for each of said branch elements provides rule-based classification, and wherein a conditional statement satisfied by a plurality of attributes for rule-based classification is entered from a screen.

8. A method of classifying defects, comprising the steps of:

inspecting a sample to detect defects;

acquiring an image of the detected defects;

extracting feature amounts of the defects from the acquired defect image; and

classifying said detected defects with a defect classifier that uses information about the acquired feature

amounts of the defects, information about said sample, and information about a machine that detected said defects;

wherein said classifier has a decision tree for hierarchically expanding defect classification class elements via branch elements, and wherein said decision tree is such that a classification rule created with inspection information that has been previously derived from an inspection of a defect sample is individually set for each of said branch elements.

9. The method according to claim 8, wherein said classification rule individually set in said classifier for each of said branch elements is set on a screen displaying said inspection information.

10. The method according to claim 8, wherein said inspection information includes one or more of an image feature amount, a defect classification result, defect coordinates, a composition analysis result, manufacture initiation history data, machine QC data, a distribution of defect locations detected on a wafer, and number of defects.

11. The method according to claim 10, wherein defect attribute information as said inspection information is presented using a defect distribution map and/or a graph indicating a relationship between a feature amount and a frequency.

12. The method according to claim 8, wherein said classifier teaches teaching defect samples belonging to a

category classified for each branch element of said decision tree on said screen.

13. The method according to claim 8, wherein said classification rule individually set for each of said branch elements provides rule-based classification and/or teaching classification.

14. The method according to claim 8, wherein said classification rule individually set for each of said branch elements provides rule-based classification, and wherein a conditional statement satisfied by a plurality of attributes for rule-based classification is entered from a screen.

15. A method of classifying defects, comprising the steps of:

inspecting a sample with a first inspection machine to acquire first inspection information including status of defect distribution in the sample;

inspecting a sample with a second inspection machine to acquire second inspection information including status of defect distribution in the sample; and

displaying, within same screen, the first inspection information including a first defect map which indicates the status of defect distribution in said sample and the second inspection information including a second defect map which indicates the status of defect distribution in said sample.

16. The method according to claim 15, further comprising the step of displaying, in said screen, an image of a defect specified in said first defect map and/or said second defect map, which are displayed within said same screen.

17. The method according to claim 15, further comprising the step of displaying, in said screen, an image of a defect specified in said first defect map and/or said second defect map, which are displayed within said same screen, and attribute data about the defect.

18. A method of classifying defects, comprising the steps of:

determining, for each defect classification class of a first defect classifier for a first inspection machine, a rate of defects to be sampled and detected by a second inspection machine among defects detected when an inspection sample is inspected by the first inspection machine; and

detecting, by said second inspection machine, defects detected when a sample targeted for inspection is inspected by said first inspection machine, in accordance with said determined sampling rate for said each defect class, and classifying said detected defects with a second defect classifier corresponding to said second inspection machine;

wherein the step of determining, for each defect classification class of a first defect classifier

corresponding to said first inspection machine, said rate of defects to be sampled and detected by said second inspection machine comprises the sub-steps of:

inspecting said inspection sample with said first inspection machine;

classifying defects of said inspection sample inspected and detected by the first inspection machine with said first defect classifier;

detecting defects of said inspection sample detected by said first inspection machine with a second inspection machine;

classify said defects of said inspection sample detected by the second defect inspection machine with said second defect classifier; and

determining, for said each defect classification class, said sampling rate for defects that are detected by said first inspection machine and classified by said first defect classifier in accordance with a relationship between the classification class of the defects in said inspection sample classified with said first defect classifier and the classification class of the defects in said inspection sample classified with said second defect classifier.

19. The method according to claim 18, wherein said second defect classifier has a decision tree for hierarchically expanding defect classification class elements via branch elements, and wherein said decision

tree is such that a classification rule created with sample inspection information that has been previously derived from an inspection of an inspection sample is individually set for each of said branch elements.

20. The method according to claim 19, wherein said individual classification rule that is set for each of said branch elements in said classifier is set on a screen that displays said sample inspection information derived from said inspection of said inspection sample.

21. A method of classifying defects, comprising the steps of:

determining a rate of defects to be sampled and detected by a second inspection machine among defects detected by a first inspection machine; and

detecting, with said second inspection machine, defects detected when a sample targeted for inspection is inspected by said first inspection machine, in accordance with said determined sampling rate for each defect class, and classifying the detected defects;

wherein the step of determining said rate of defects to be sampled and detected by said second inspection machine comprises the sub-steps of:

inspecting an inspection sample with a first inspection machine;

classifying the defects inspected and detected by the first inspection machine with a first defect classifier; and

determining a rate of defects sampled by said second inspection machine for each defect classification class in accordance with reliability of classification to each classification class of defects classified with said first defect classifier for said each defect classification class.

22. The method according to claim 21, wherein said second defect classifier has a decision tree for hierarchically expanding defect classification class elements via branch elements, and wherein said decision tree is such that a classification rule created with sample inspection information that has been previously derived from an inspection of an inspection sample is individually set for each of said branch elements.

23. The method according to claim 19, wherein said classification rule that is individually set for each of said branch elements in said classifier is set from a screen that displays sample inspection information derived from an inspection of said inspection sample.